

REMARKS

Claims 12-26 are all the claims pending in the application. By this Amendment, Applicants amend claims 12, 14, 15, 18-20, 25, and 26 to better conform them to U.S. patent practice. Applicants submit, however, that the amendments do not narrow the scope of the claims in any way, and thus, do not create any estoppel in the application of the doctrine of equivalents.

Allowable Subject Matter

Applicants thank the Examiner for indicating that claims 16 and 17 are allowed. Applicants, however, do not acquiesce to the reasons for allowance set forth on pages 4 and 5 of the Office Action.

Claim Rejections - 35 USC § 102

Claims 12-15 and 18-26 are rejected under 35 U.S.C. 102(b) as allegedly being anticipated by Yutkowitz *et al.* (U.S. Patent No. 5,710,498). For *at least* the following reasons, Applicants respectfully traverse the rejection.

Claims 12-15

Applicants respectfully submit that claim 12 is not anticipated by Yutkowitz. For example, claim 12 relates to a servo controller. The servo controller comprises, *inter alia*, a position feedback correction unit for outputting a corrected position feedback signal by adding a between-axes positional deviation to a self-axis position to which a gain is applied. The between-axes positional deviation is the difference between a self-axis position and another-axis position. Moreover, the between-axes positional deviation is filtered and gained.

In the Office Action, it is alleged that the position error and velocity command generator 23 shown in FIG. 3b of Yutkowitz, along with col. 6, lines 12-65 and col. 9, lines 26-56, disclose the claimed position feedback correction unit in as complete detail as set forth in claim 12. Applicants respectfully disagree.

For example, although Yutkowitz's position error and velocity command generator 23 determines differences between commanded positions $PCMD_I$ and measured positions $PACT_I$ (Yutkowitz, col. 9, lines 52-56), neither the commanded positions $PCMD_I$ nor the measured positions $PACT_I$ disclose or suggest the claimed between-axes positional deviation. The position error and velocity command generator 23 is part of Yutkowitz's position loop 22, which is illustrated by the summing junction 12 and block 14 of FIG. 2a (col. 9, lines 36-37).

At junction 12, a position loop error is determined as the difference between the compensated commanded position and actual position of the controlled element (col. 6, lines 21-29). The actual position of the controlled element clearly cannot disclose the claimed between-axes positional deviation. Further, the compensated commanded position also does not disclose the claimed between-axes positional deviation because the compensated commanded position is obtained by **adding** a position compensation value to the position command $PCMD_I$ at the summing junction 230 (positioned just before the summing junction 12 in FIG. 2a). *Id.* On the other hand, claim 12 recites that the between-axes positional deviation is the **difference** between a self-axis position and another-axis position.

Further, there is no disclosure or suggestion in Yutkowitz of calculating, with respect to the subject **controlled element**, a difference between a self-axis position and **another-axis**

position. Only the position (desired, actual, or compensated) of the controlled element itself is taken into account. A position of **another-axis** when outputting a velocity command from the gain multiplier 14 (which takes in as input the position loop error output from the junction 12) is never accounted for in Yutkowitz.

In view of the foregoing, Applicants respectfully submit that Yutkowitz does not disclose each and every feature of the claimed position feedback correction unit in as complete detail as set forth in the claim. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(b) rejection.

Claims 13-15 are patentable *at least* by virtue of their dependency. Further, claims 13-15 are patentable for reasons other their dependency.

For example, claim 13 recites that in the position feedback correction unit, the gain applied to the between-axes positional deviation is set at **a negative value during operational stops**, and is set at a positive value during operational runs. The Examiner cites col. 11, line 65 to col. 12, line 6 of Yutkowitz to disclose this feature. Applicants respectfully disagree.

In the cited portion, Yutkowitz discloses that when the current state is in a negative direction, “no command state is set if the current commanded velocity is zero...” (*see* also: col. 5, lines 33-35). The no command state corresponds to no compensation being applied to the position values, i.e., **no gain** is applied to the desired position command PCMD, let alone a **negative valued** gain as required by claim 13.

Claims 14 and 15 recite that the servo controller further comprises a velocity feedback correction unit for outputting a corrected velocity feedback signal by adding a between-axes

velocity deviation, filtered and gained, that is the **difference** between the self-axis velocity and **another-axis velocity**, to a self-axis velocity to which a gain is applied. The Examiner contends that col. 9, lines 57-62 of Yutkowitz disclose this feature. Applicants respectfully disagree.

For example, in Yutkowitz, it is generally disclosed that the velocity loop control 37 determines differences between commanded velocities and actual velocities. The commanded velocities do not disclose or suggest the claimed between-axes velocity deviation, since another-axis velocity is never taken into account when calculating an estimated velocity in Yutkowitz (e.g., see col. 6, lines 36-47, "...values of estimated velocity according to a filter function operating on position commands and velocity feedforward commands may be periodically determined according to...(equation 1)"). Therefore, Yutkowitz cannot disclose the claimed velocity feedback correction unit set forth in claims 14 and 15.

Claims 18-24

Applicants respectfully submit that claim 18 is not anticipated by Yutkowitz. For example, claim 18 relates to a servo controller. The servo controller comprises, *inter alia*, (1) a reference model control unit for calculating, based on a position command, a model position and **a model acceleration** for simulating an ideal movement for a machine, (2) a position control unit for performing, according to the difference between the model position and a self-axis position, positional control to output a velocity command, and (3) a model torque correction unit for **correcting**, according to the self-axis position and another-axis position, **the model acceleration** to calculate a model torque.

As an initial matter, Applicants point out that the Office action does not address features (1) and (2) of claim 18 noted above (Office Action, page 3, first full paragraph). Instead, the features of claim 12, which are not recited in claim 18, have been addressed (again) in lines 1-6 of the subject paragraph in the Office Action. Accordingly, Applicants submit that the Office action is incomplete, and request the Examiner to address all the features of every claim presented for examination in any subsequent action.

Further, Applicants respectfully submit that Yutkowitz does not disclose the model torque correction unit for **correcting**, according to the self-axis position and **another-axis position**, the model acceleration to calculate a model torque. First, as discussed above with respect to claim 12, Yutkowitz does not disclose any correction or processing which accounts for another axis of the controlled element.

In addition, the claimed model torque correction unit is a feedforward correction unit (e.g., the accumulator in claim 18 calculates a torque command based on the model torque calculated by the model torque correction unit and the feedback torque command). On the other hand, there is no feedforward correction of the torque command at the summing junction 240. Instead, the correction processing in Yutkowitz is based on feedback signals.

Accordingly, Yutkowitz does not anticipate claim 18, and withdrawal of the 35 U.S.C. § 102(b) rejection is respectfully requested.

Claims 19-24 are patentable *at least* by virtue of their dependency.

Claims 25 and 26

Applicants respectfully submit that claim 25 is not anticipated by Yutkowitz. For example, claim 25 relates to a servo controller. The servo controller comprises, *inter alia*, (1) a reference model control unit for calculating, **based on a position command**, a model position and a model acceleration for simulating an ideal movement for a machine, (2) a position feedback correction unit for outputting a corrected position feedback signal based on a self-axis position and **another-axis position**, (3) a position control unit for performing, according to a **difference** between the model position and **the corrected position feedback signal** outputted from the position feedback correction unit, positional control to output a velocity command, (4) a velocity feedback correction unit for outputting a corrected velocity feedback signal based on a self-axis velocity and **another axis-velocity**, and (5) a model torque correction unit for **correcting**, according to another-axis model acceleration, the self-axis position, **and the other-axis position**, the model acceleration, to calculate a model torque.

Since feature (5) is similar to the one discussed above with respect to claim 18, Applicants respectfully submit that claim 25 is patentable for *at least* reasons given above with respect to claim 18. Further, as submitted earlier with respect to claims 12 and 18, Yutkowitz does not disclose or suggest taking into account any other-axis value (see above-noted features 2 and 4 of claim 25) when calculating the compensated position/velocity values or the positional errors. Accordingly, claim 25 is also patentable for *at least* reasons given above with respect to claim 12.

Furthermore, above-noted feature (4) of claim 25 recites a position control unit for performing, according to a **difference** between the model position and **the corrected position**

feedback signal outputted from the position feedback correction unit, positional control to output a velocity command. Yutkowitz, however, does not disclose any **corrected** position feedback signal, much less a **difference** between the compensated position value (allegedly the model position) and the **corrected** position feedback signal. Rather, the positional difference in Yutkowitz is between the compensated position value and an **actual** position of the controlled element at junction 12 (FIG. 2a, col. 6, lines 25-29, and col. 9, lines 53-56). Yutkowitz does not disclose that this actual position is **corrected** at the time the difference between the actual position and the compensated position value is calculated at the junction 12.

Therefore, claim 25 is patentable over Yutkowitz, and thus, withdrawal of the 35 U.S.C. § 102(b) rejection is respectfully requested.

Claim 26 is patentable *at least* by virtue of its dependency.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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